

Listing of the Claims:

1. (Currently Amended) A cooling method of a metal part by immersing the heated metal part in a cooling liquid, the method comprising the step of:
breaking a vapor film which is formed when the cooling liquid vaporizes on a surface of the metal part;
wherein the step of breaking the vapor film occurs by applying a pressure to the vapor film, the pressure being so that the pressure repeatedly varied, varies by the step of one of 1) applying oscillations to the cooling liquid with an oscillation device horizontally and reciprocally moving in the cooling liquid and a stirrer separately arranged in the cooling liquid, 2) changing a pressure applied to a liquid surface level of the cooling liquid by introducing a gas above the liquid surface level via a gas introduction pipe, and 3) combining applying the oscillations to the cooling liquid with the oscillation device horizontally and reciprocally moving in the cooling liquid and changing the pressure applied to the liquid surface level of the cooling liquid by introducing the gas above the liquid surface level via the gas introduction pipe.
- 2-4. (Cancelled)
5. (Previously amended) The cooling method of the metal part according to claim 1, wherein the step of applying oscillations to the cooling liquid includes the step of using multiple oscillation devices.
6. (Previously amended) The cooling method of the metal part according to claim 1, further includes the step of adjusting at least one of an amplitude and frequency of the oscillations according to the thickness of the vapor film.
7. (Previously amended) The cooling method of the metal part according to claim 1, further including the step of adjusting at least one of an amplitude and frequency of the oscillations according to the condition of the cooling liquid.
8. (Previously amended) A cooling method of the metal part according to claim 1,

1, further comprising the step of stirring the cooling liquid after the vapor film begins to be broken so that bubbles formed by the breakage of the vapor film are caused to diffuse in the cooling liquid.

9. (Previously amended) The cooling method of the metal part according to claim 8, further comprising the step of adjusting at least either of the intensity of the stirring and the direction of a flow generated by the stirring according to the condition of the cooling liquid and the condition of the metal part in the cooling liquid.

10. (Currently amended) A method of manufacturing a metal part, the method comprising the steps of:

heating the metal part; and

cooling the metal part after the heating thereof by immersing the metal part in a cooling liquid,

wherein the cooling step includes breaking a vapor film which is formed when the cooling liquid vaporizes on a surface of the metal part by applying a pressure to the vapor film, the pressure being so that the pressure repeatedly varied varies, and

wherein the step of applying the pressure to the vapor film so that the pressure repeatedly varies includes one of 1) applying horizontal oscillations to the cooling liquid by reciprocally moving an oscillating device in a horizontal direction, 2) repeatedly changing a pressure to be applied to a liquid surface level of the cooling liquid by introducing gas above the liquid surface level, and 3) a combination of applying the horizontal oscillations to the cooling liquid by reciprocally moving an oscillating device in a horizontal direction and changing the pressure to be applied to the liquid surface level of the cooling liquid by introducing gas above the liquid surface level.

11. (Cancelled)

12. (Previously presented) The manufacturing method of claim 10 further comprising the step of:

actuating a stirring process of the cooling liquid when the vapor film begins to be broken.

13. (Canceled)

14. (Previously presented) The manufacturing method of claim 10, wherein the step of changing a pressure to be applied to a liquid level of the cooling liquid includes the step of introducing a gas directly into the cooling liquid.

15. (Previously presented) The manufacturing method of claim 14 further comprising exhausting the gas from the cooling liquid.

16. (Previously presented) A cooling method of a metal part by immersing the heated metal part in a cooling liquid, comprising:

breaking a vapor film which is formed when the cooling liquid vaporizes on a surface of the metal part;

wherein the step of breaking occurs by combining steps of applying oscillations to the cooling liquid with an oscillation device horizontally and reciprocally moving in the cooling liquid and changing the pressure applied to the liquid level of the cooling liquid.